Candidate Information

Position:	Research Fellow - Microwave Imaging with Reconfigurable Antennas
School/Department:	Centre for Wireless Innovation
Reference:	22/110325
Closing Date:	Monday 14 November 2022
Salary:	£35,333 - £36,386 per annum
Anticipated Interview Date:	Monday 5 December 2022
Duration:	3 years or until 31 January 2026, whichever is soonest.

JOB PURPOSE:

Design and implementation of reconfigurable antennas for microwave imaging applications. This will be carried out as part of a research team, within an exciting new Horizon Europe – EPSRC funded project, aiming to develop real-time microwave imaging technology using reconfigurable, coherent active surfaces and incoherent passive sources.

MAJOR DUTIES:

1. Design and develop antennas and reconfigurable surfaces for microwave imaging.
2. Simulate and measure microwave antennas and reconfigurable apertures, and investigate sparse aperture layouts for computational imaging.
3. Develop hardware solutions to achieve real-time radar measurements and data acquisition.
4. Contribute to research on developing imaging algorithms based on techniques such as back-projection, matched-filtering, range migration, etc., and liaise with others in the research consortium to carry out system integration.
5. As part of a research team, verify the operation of the developed antennas and algorithms by simulations and measurements.
6. Prepare, in consultation with line manager, material for publication in prestigious leading journals and presentations at major international conferences to disseminate and publicise research findings.
7. Contribute to undergraduate and postgraduate supervisions, within the post holder's area of expertise and under the direct guidance of a member of academic staff.
8. Identify new funding opportunities and assist in the preparation of funding proposals.
9. Undertake supplementary duties relevant to the success of the project including administrative duties and additional training and development activities as required.

ESSENTIAL CRITERIA:

1. Normally have or be about to obtain (within 2 months) a PhD in Electrical/Electronic engineering or Physics.
2. At least 3 years relevant research experience to include:
   - Design and implementation experience of reconfigurable antennas and surfaces (metasurfaces, reflecting surfaces, etc).
   - Designing RF antenna element/array.
   - Using RF design and simulation software such as CST Microwave Studio and Ansoft HFSS.
   - Conducting measurements and characterisation of RF/microwave devices and circuits and antennas using measurement equipment such as vector network analysers, spectrum analysers, power meters etc.
   - Using far-field and/or near-field antenna measurements.
3. Demonstrable knowledge in microwave & millimetre-wave imaging, reconfigurable antennas and surfaces.
4. Strong publication record commensurate with stage of career.
5. Ability to contribute to broader management and administrative processes.
6. Contribute to the School's outreach programme by links with industry, community groups etc.
7. Willingness to undertake additional training in research methods and other related skills as required.
8. Practical problem solving skills, independence of thought and initiative.
9. Ability to communicate complex information effectively in oral and written format.
10. Ability to build relationships to develop internal and external networks.

11. Ability to assess and organise resources.

DESIRABLE CRITERIA:

1. A PhD in reconfigurable metasurfaces and/or reflecting surfaces.
2. Experience of:
   - Sparse/thinned antenna arrays.
   - Using PCB prototyping software, such as LPKF CircuitCAM, LKPF board master, Altium Designer, AutoCAD etc.
   - Using MATLAB.
3. Knowledge in compressive sensing.
4. Performed work relevant to near-field antenna measurements, near-field processing and near-field / far-field transformations.
5. Ability to code and implement data acquisition algorithms on target hardware.